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12. *KACHAL*, A TACKLE FOR FILE-FISH (FAMILY BALISTIDAE: PISCES)

(*With a text-figure*)

To suit local exigencies and conditions several indigenous types of gear have been developed by fishermen from ancient times which though primitive and crude in appearance are efficient in their own way. One such gear is the *Kachal*, used to capture the file-fish (Balistidae) along the south-west coast of India between Muttum and Vizhingam. Since good results are obtained at little cost, the gear is used extensively by fishermen. No information is available about this in any of the published records. Enquiries show that *kachal* has been in use for over 75 years.

The *kachal* consists of a circular frame about 25 cm. in diameter made of coconut leaf stalk and a bag-like net. Three or four finely twisted cotton strings about 50 cm. in length are tied to the frame at equal intervals (Text-figure). The strings are tied together and to a

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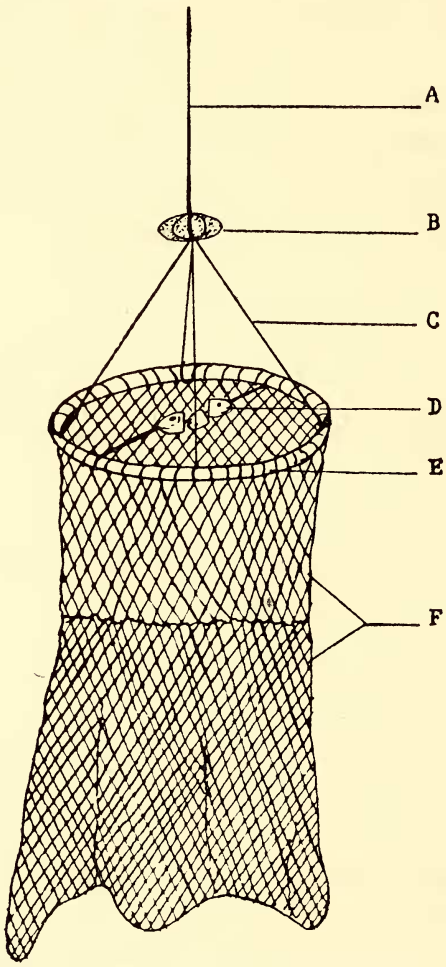
strong coir rope about 100 metres long. A stone sinker weighing about a kilogram is tied where the coir rope joins with the cotton strings. The main part of the gear is a bag of cotton netting about 60 cm. long, consisting of two or three pieces of net (*mal*) joined together. The net is hand-made, the mesh size, when stretched, being



A. lead rope ; B. sinker ; C. connecting strings ; D. bait ; E. frame ; F. net.

20 mm. throughout. The bag-like net is tied around the circular frame, the mouth portion of the net, which is attached to the frame, being of one piece or *mal*. To the distal end of this is attached the main bag which is considerably wider.

The *kachal* is operated from a catamaran or a small canoe. One person can operate two units at a time. After selecting a suitable

site for operation, advantage is taken of the habit of the file-fish of cutting its food into small bits, to locate file-fish in the area. A hand line with one or two hooks baited with cuttle fish meat is lowered. If the bait is eaten up completely without the fish being caught by the hooks it indicates that the bait has been taken by file-fish.

To start the operation of *kachal*, cuttle fish meat is tied to a string across the mouth of the circular frame. The net is lowered and the mouth of the *kachal* goes down with the bag portion following, because of the weight of the sinker. File-fish attacking the bait, and in line with the mouth enter inside the spread net. When the desired depth is reached the operator stops lowering the rope and the mouth of the *kachal* turns up with file-fish feeding on the bait from within and outside the mouth of the net. The size of the school is felt by the operator through the jerks he gets from the rope. In pulling up the net, the first pull is in the form of a jerk so that all the fish at the mouth will go inside the net. After this, the net is pulled up very quickly allowing little time for the fish to escape. Subsequent operations are made by using skinned file-fish head as bait and more file-fish are caught by using skinned file-fish head than any other bait. It is estimated that during a good season each haul brings on an average of 75 to 100 fish.

The fishing villages between Vizhingam and Muttum in the south-west coast extensively use this gear. The fishing season is approximately four months from December to March. During this period file-fish form a major fishery owing to the paucity of other fishes in the landings. The operating radius for the *kachal* is from seven to ten miles from shore, usually at 60 to 80 metres depth. However, the fishing grounds shift according to the movements of the shoals. Fishing is conducted mainly during day time. Venkataraman & George (1964) recorded concentrations of file-fishes of the species *Odonus niger* and *Sufflamen capistratus* at 50-60 metre depths in the west coast. Among the species of file-fish taken by *kachal* at Vizhingam during 1960 to 1963 the black balistid, *Odonus niger* was the most common followed by *Pseudobalistes fuscus* and *Sufflamen capistratus*. The percentage proportion of file-fish landed at Vizhingam in comparison with those of other fishes is given by Nayar (1958).

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13. THE RUSTY PLUM APHID, *HYSTERONEURA SETARIAE* (THOMAS) IN SOUTHERN INDIA

The Rusty Plum Aphid, *Hysteroneura setariae* (Thomas) has been known for nearly a century from north and south America where it lives on plum trees during autumn as its primary host and on cereals and grasses during summer. During the last decade, Eastop (1954) noted it in north-eastern Africa and Tao (1962) in Hong Kong. It has now been collected in southern India for the first time. Evidently it has been distributed in recent years from the western hemisphere to other parts of the world along with the shipments of grains and other commodities. Some of the important features of the insect are given here.

Diagnostic features. A small, brown aphid with dark cornicles and pale cauda with two pairs of hairs; legs and antennae brown with intermittent white portions; terminal process of the last antennal segment very long. In the winged forms, the hind wing has only one oblique vein instead of the usual two.

Feeding habits. In south India the aphid has been observed to feed on the following plants: *Oryza sativa* (rice), *Sorghum vulgare* (sorghum), *Zea mays* (maize), *Eleusine coracana* (Italian millet or *ragi*), *Bothriochloa insculpta, Cenchrus setigerus, Chloris barbata, Cynodon dactylon, Dactelocteniuм aegyptium, Digitaria longiflora, Eragrostis major, Panicum antidotale, Panicum flavidum, Panicum montanum, Pennisetum* sp., *Saccharum spontaneum, Setaria sphacelata* and *Cyperus* sp.

The aphid usually sucks the sap of the plant from the base of the spikelets. On rare occasions it feeds on the stalks of the panicle. It occurs in small colonies on the rachis of the spikelets. Occasionally the black ant, *Camponotus compressus,* is seen to attend on the aphid singly.

It occurs all through the year whenever the grasses put forth earheads, but is scarce in the early part of June on the plains due to the summer heat.

Distribution. The aphid has been noted from Madurai in the south to Anantapur in the north, on the plains as well as on the hills